

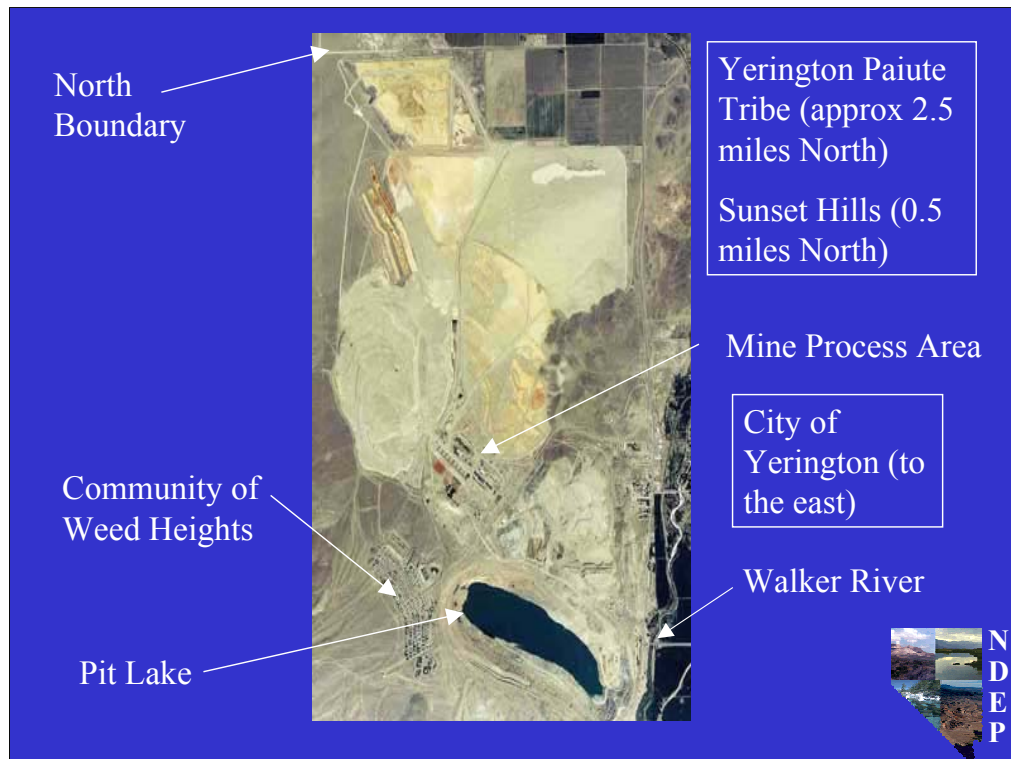
# NEVADA DIVISION of ENVIRONMENTAL PROTECTION



Yerington Mine Update

December 2003





Approximately 50% of this somewhat checker-boarded site is owned by Arimetco. The other 50% is Federal land, managed by the Bureau of Land Management

# History of Mining Operations

- Anaconda Minerals Company - 1952-1978
- Limited Activity - 1978-1989
- Arimetco Operation - 1989-1999
- Arimetco Bankruptcy – November 1996
- Arimetco Abandonment – January 2000



The Anaconda Minerals Company leased the property in 1941 and conducted an exploration program from 1942 to 1945. The stripping of overburden began in June 1952, and the first oxide copper precipitate was shipped in November 1953. Between 1952 and 1978 Anaconda mined ore and recovered copper using several processes including vat leaching, flotation and heap leaching. Sulfuric acid was manufactured in an on-site roaster for leaching. In 1978 Anaconda closed the operation at the Yerington mine because of low copper prices, impending exhaustion of oxide reserves and low profit margin on the sulfide ore.

The Anaconda Company was purchased by the Atlantic Richfield Company in 1977.

In 1989, Arimetco purchased the mine and developed a Solvent Extraction and Electrowinning plant operation. Arimetco built 5 heap leach pads on the property that were leached with a sulfuric acid solution. Arimetco mined ores from the Anaconda low-grade stockpiles, the oxide tailings, Macarthur pit and Yerington pit.

Arimetco International the parent to Arimetco Inc. filed bankruptcy in November 1996. The Yerington mine lost its environmental bonding which was based on a corporate guarantee. Arimetco was ordered by the State of Nevada to cease mining operations in November of 1998 for lack of an environmental bond. The mining of new ore was halted and Arimetco was not allowed to add fresh make up sulfuric acid to the leach solutions. Arimetco continued to recover copper from leach solutions until November of 1999.

By January 2000 Arimetco could no longer afford to maintain the site. At that time the Nevada Division of Environmental Protection contracted SRK Consulting for the fluid management on the Yerington property. Since the closure in January 2000 the Arizona bankruptcy court has been trying to market the property with little success.

# Recent NV Regulatory History

- EPA Proposes Site Listing on the Superfund NPL – December 2000; Governor Guinn does not concur – January 2001
- NDEP/EPA/BLM Memorandum of Understanding With NDEP As Lead Agency - March 28, 2002
- Scope of Work Approved by All Agencies for Incorporation into AOC – May 28, 2002
- NDEP/Atlantic Richfield Administrative Order on Consent - October 29, 2002
- NDEP Lead on Interim Measures to Improve Conditions Which Could Cause an Imminent Threat - Ongoing



While the NDEP has a longer history of regulating this property through the Bureau of Mining Regulation & Reclamation, this briefing focuses primarily on activities resulting from the Arimetco Bankruptcy Site Abandonment, and resultant shift to the NDEP Bureau of Corrective Actions.

The NDEP's 1985 Order to Atlantic Richfield (formerly the Anaconda Minerals Company) required that groundwater conditions along the northern boundary of the mine be addressed. More recent regulatory involvement includes:

On January 25, 2000, the current owner/operator, Arimetco, ceased operations and abandoned the Yerington site. The NDEP took over site care and maintenance at that time. More info is included herein.

The State's reasons for resisting NPL listing include: NPL listing is not in the best interest of the community; NDEP is making progress in addressing imminent threats to human health and the environment; and that the NDEP has been working effectively, and now has an AOC in place with, a viable Responsible Party – Atlantic Richfield Company.

Extensive facilitated negotiations among regulatory agencies and interested parties resulted in two legal documents setting the framework for moving forward. The Memorandum of Understanding exists as a defining document among the Regulating Agencies, "to coordinate the continuing investigation and response actions to address the area where ... contaminants ... have come to be located". This framework also defines Agency document review responsibilities and provides for resolution of dispute.

The Administrative Order on Consent is the legal basis for Atlantic Richfield to "determine the nature and extent of contamination ... and likewise develop a Final Permanent Closure Plan". This AOC also provides the mechanism for Atlantic Richfield to reimburse NDEP's expenses related to the site.

## Summary of NDEP Actions

- January 2000 - Present: Arimetco Site Abandonment; NDEP Takeover of Fluids Management and Site Care & Maintenance
  - Jan 2000 fluid flow ~ 1,300 gallons per minute
  - Present fluid flow ~ less than 36 gallons per minute
- General Site Cleanup
- Security Upgrades
- Interim Measure Covering the “Red Dust”
- Drum Removal
- Electrowinning Fluids Removal



More detail on each bullet follows ...

# NDEP Fluid Management

- Upon Arimetco Abandonment, NDEP began managing draindown of mining fluids - January 25, 2000
- Fluid Management Goals:
  - Management of fluid volume within containment systems
  - Reduction of fluid volume with enhanced evaporation
  - Maintenance of equipment, pumps, piping, etc. required for fluids management
  - Maintenance and monitoring of leak detection systems



On January 25, 2000, Arimetco ceased operations and vacated the Yerington site. The NDEP utilized the existing emergency mitigation contractor, SRK Consultants, to maintain the property and avoid overflow of the heap leach ponds that continued to receive drain-down mining fluids. These steps were necessary to mitigate the imminent hazard of an uncontrolled release of acidic solution.

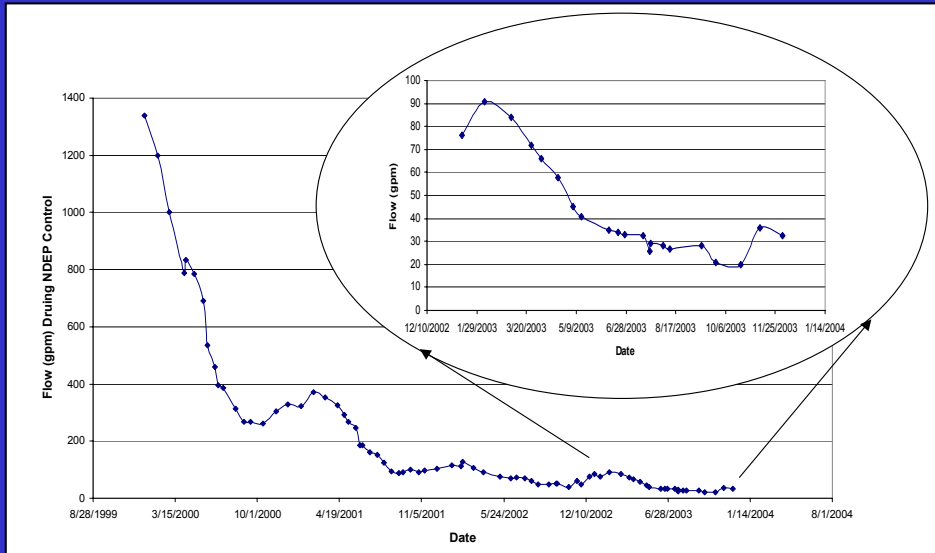
•In 2000, the time to pond upset and release was less than eight hours. Contractor labor costs were high due to 3 shifts, 7 days a week. The time to pond upset now is measured in weeks. After Slot Pond relining to increase competent pond capacity, pond upset will be measured in months and contractor labor will be cut to 3 days a week.

•In 2000, power bills were \$25,000.00/month. Pumps have been optimized, fluid volumes have decreased, and power cost is now down to \$300.00/month

NOTE: In October 2003, the evaporators were shut off pending evaluation of Radionuclides in mine process fluids. In the interim, fluids are being re-circulated to one of the heaps for storage within the tailings.

# Draindown Fluid Management

(Total Flow From 4 Sources)



- When SRK began the Fluid Management operations there was over 1,300 gallons per minute of leach solutions flowing out of the five Arimetco leach pads.
- Current combined flow is less than 36 gallons per minute.
- With additional capital improvements to the system, the forecast for Summer 2004 is 20 gallons per minute.

# NDEP On-Site Actions

- General Site Cleanup
  - As time allows, NDEP's contractor performs activities such as harvesting useable piping, organization of materials and general site improvements.
- Security Upgrades
  - While security is not the role of the NDEP, the NDEP's contractor has improved the condition of the perimeter fence & mine warning signs. The NDEP has reminded the BLM and Arimetco of their site security responsibilities as landowners.





# NDEP Interim Actions

- Covering the “Red Dust” – Sept 2000, March 2001 & March 2002 ~ 17.2 Acres



Three areas of the site contained surface deposits of what is commonly referred to as the “Red Dust”. These Iron Bleed Tailings areas were a significant concern to the community and the NDEP acted to conduct an Interim Measures that re-graded and capped these areas with a coarse on-site gravel material. Prior to covering, for the March 2002 work, the iron bleed tailings and cover materials were sampled and analyzed. All locations were well documented prior to application of the dust-mitigation cover.

This project was conducted by the NDEP and financed by the Atlantic Richfield Company.

# NDEP Interim Actions

- Drum Removal  
Jan – June, 2003



Upon bankruptcy and site abandonment, Arimetco had abandoned Electrowinning fluids and drummed materials involved in this removal project. The State of Nevada issued a Finding of Alleged Violation and Order on September 23, 2002 to Arimetco requiring that they generate a workplan and schedule for the proper removal and disposal of these materials. On October 23, 2002 the State of Nevada issued a notice of Arimetco's failure to comply with the Order, and subsequently took over the actions. Removals began in January, 2003 and work was complete in July, 2003

As part of the General Site Cleanup and a subsequent major Removal Action, the NDEP arranged for collection, sampling and analysis of over 400 drums and containers. With few exceptions, all materials were disposed of or recycled to the maximum extent feasible. PCB-containing and paint-related materials were re-packaged and stored on site. Many materials were recycled to minimize landfill disposal, empty crushed metal drums were recycled and Diesel and & other petroleum products were recycled at an alternative fuel facility.

The Drum and Electrowinning Removal Projects were funded by the State of Nevada, conducted through SRK Consulting and have been reimbursed by the Atlantic Richfield Company.

# NDEP Interim Actions

- Electrowinning Fluids Removal  
Jan – June, 2003



Electrolyte was recycled at Equatorial Mineral Park mine in Kingman, Arizona. Kerosene was recycled at an alternative fuel facility. Piping was emptied and cleaned to the maximum extent feasible.

## **Approximate Quantities Removed in Drum & EW Project:**

Electrolyte ~ 233,000 gallons

Organic ~ 19,000 gallons

Waste Oil ~ 4,500 gallons

Copper Sulfate ~ 72 cubic yards

Crushed drums ~ 40 cubic yards

Non-Haz Small SX Plant Mat'l ~ 16,000 gallons

Non-Regulated Liquid waste ~ 18,000 gallons

Non-Regulated Solid Wastes ~ 200 cubic yards

Hazardous Waste (Lead) ~ 70 cubic yards

Hazardous Waste (other) ~ 1,800 pounds

# NDEP Interim Actions

- Electrowinning Fluids Removal (Cont'd)  
Jan – June, 2003



View of Electrowinning building fluid & copper sulfate crystal removal.

Each set of anodes and cathodes had to be removed from each cell, fluids vacuumed out, crystals chipped or hydro-blasted off the plates and out of each tank cell, and cathodes replaced. It was a monumental labor effort.



# Additional Accomplishments

- Installation of Meteorological Station
- Operation and Upgrades to the Groundwater Management System (a.k.a. the Pump-Back System)



In May 2002 Atlantic Richfield Company installed a meteorological station in the area of the existing groundwater pump-back system near the northern property boundary. This station collects site-specific climate data to assist in the evaluation of the water balance at the Mine and to support the collection of air quality monitoring data. The station measures relative humidity and solar radiation.

In March 2002 the Yerington Paiute Tribe also installed Met stations with sampling devices at the Reservation and in the Colony.

The Pump-Back System was installed as a result of NDEP's 1985 Order and has been operational since. Numerous wells extract groundwater along the northern boundary in an effort to control off-site migration of groundwater contaminants. The extracted groundwater is evaporated from surface ponds designed for that purpose. The efficacy of the pump-back wells are being re-evaluated.

System upgrades by Atlantic Richfield include: year-round operations since 1997; evaporation pond improvements and the addition of five new wells in 1998; new pumps and power supply in 1999 and 2000; and evaporation pond liner improvements in 1999 and 2001.

# Additional Accomplishments

- Installation of Two New Groundwater Monitoring Wells
- Site-Wide Groundwater Monitoring
- Sampling of Water and Soils in the Wabuska Drain (Phase I)
- Improvements to water management around the Mega Pond



In June 2002 Atlantic Richfield installed two new shallow groundwater monitoring wells in areas north and northwest of the mine site. The locations were recommended in 2001 as suitable locations for filling in gaps in the existing groundwater monitoring network. These wells, along with other existing site-wells and a network of domestic wells, are included in a quarterly site-wide groundwater monitoring program. Some of this well network exist on the Paiute Reservation. Data from these monitoring events will be incorporated into the Groundwater Conditions Work Plan that is being generated under the AOC's Scope of Work.

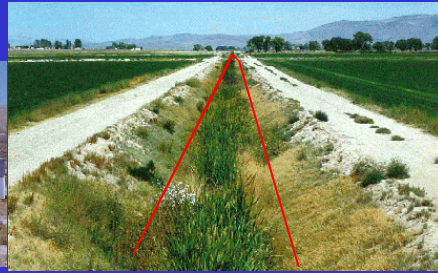
Groundwater monitoring upgrades implemented by the Yerington Paiute Tribe include installation of seven new monitoring wells on the Reservation in 2001 and increased monitoring of other Reservation wells.

The Wabuska Drain Phase I sampling event occurred at locations agreed to by the three agencies. The data from this event will be utilized for development of the Wabuska Drain Phase II Workplan.

The condition of the Mega Pond is very dismal. SRK Consulting has implemented low-technology improvements to water management to keep as much water out of the Pond as possible. The pond now only receives flow from significant storm events.

# Additional Accomplishments

- Groundwater Monitoring Event with EPA R.9 November 1999
  - Residential Wells at 24 locations
  - Community Wells at 3 locations
  - Monitoring/Pumpback Wells at 6 locations
  - Wabuska Drain at 4 Locations
  - Background Wells at 5 locations



The residential wells from this event are now included in the quarterly groundwater monitoring program.

# Interim Measures Planned by the NDEP

- TENORM Uranium Investigation
  - Short-Term:
    - Investigate and quantify potential immediate human health exposure to naturally occurring Uranium that has been concentrated as a result of mining processes
  - Addition to Scope of Work:
    - Add TENORM Uranium Investigation into Comprehensive Site Assessment Work Plans



TENORM – Technologically Enhanced Naturally Occurring Radioactive Materials

In general, the Agencies have been looking at Uranium as a Contaminant of Potential Concern at this site. In August 2003 the Agencies became aware of additional Anaconda Minerals Company documentation archived in a special collection at the University of Wyoming. Between August and November, the Agencies had been working together to generate a sampling plan to determine the potential imminent exposure to human health. In late November, the NDEP began to forward it's own plan to speed the process along.

## Short Term Work Details:

- Groundwater monitoring event for December 16, 2003 added Uranium, Radium 226 and Radium 228 to the monitoring program
- Collect and analyze samples of dust-generating material for the presence of radionuclide components.
  - Initial Inter-Agency screening and planning field event – December 17, 2003.
  - Target date for Sampling Plan deliverable from SRK Consulting – December 31, 2003.
  - Target soil sampling schedule - by January 15, 2004



# Interim Measures Planned by the NDEP

- Fugitive Dust Mitigation
  - The NDEP is spear-heading a project to mitigate areas of the site that continue to pose a dust-generation problem
  - Data from January 2004 sampling event will provide valuable data on soil character in relation to the potential presence of TENORM
  - Dust mitigation project is intended to bring site into compliance with NDEP Air Pollution Control Law
  - Project will be reimbursed by Atlantic Richfield



# Interim Measures Planned by the NDEP

- Pump-Back Well System
  - Continue review and evaluation of efficiency and capture of pump-back wells
  - Initiate research and pilot project for potential efficacy of phytoremediation (trees) along the northern boundary of the site. Potential benefits are: groundwater capture; potential contaminant removal through uptake; and aesthetic enhancement of the property.



# Interim Measures Planned by the NDEP

- Capital Improvements to the Draindown Fluids Management aspect of the site will further enhance evaporation and reduce NDEP Contractor Labor.



“Slot” Ponds



Some low-cost or no-cost improvements have been made already and include re-sizing of pumps and optimizing of evaporator equipment, as well as more efficient water management.

The re-lining of the “Slot Ponds” is on hold due to cold weather and resolution of health and safety issues related to TENORM Uranium. Re-lining is a necessary component of the capital improvements due to the need for increased storage and pond-surface evaporation.

# Interim Measures Planned by the NDEP

- NDEP will continue proposing interim measures and presumptive remedies site-wide.
- NDEP believes that the rapid evaluation and completion of these tasks is technically defensible, is in the best interest of the public and should not be subject to unwarranted delays.



Proposed interim measures/presumptive remedies are possible for:

- Closure of certain heap leach pads and catchment ponds;
- Control of surface water run-on and run-off;
- Minimization of erosion; and
- Other engineering controls which are routine mine closure activities that do not require extensive study.

# Progress on Scope of Work

- Formation of Yerington Technical Work Group
- Formation of Yerington Stakeholders Group
- Community Relations Plan – Final Approved



# Yerington Stakeholders Group

- NV. Div. of Environmental Protection (NDEP)
- United States Environmental Protection Agency (EPA)
- United States Bureau of Land Management (BLM)
- Atlantic Richfield Company (ARC)
- Walker River Paiute Tribe
- Office of Senator Harry Reid
- Lyon County
- Yerington Paiute Tribe
- City of Yerington
- United States Bureau of Indian Affairs (BIA)
- United States Fish and Wildlife Service (USFWS)
- Walker River Irrigation District



## Roles and Responsibilities:

- Represent interests of various people, organizations and communities;
- teamwork approach being in the best interest of all parties;
- local involvement encouraged

## Primary Stakeholder Contacts:

NDEP – Art Gravenstein

EPA – Jim Sickles

BLM – Earle Dixon

ARC – Dan Ferriter

Walker River Paiute Tribe – Tad Williams

Senator Reid's Office – Paul Thomsen

Lyon County – Phylis Hunewill

Yerington Paiute Tribe – Duane Master, Sr.

City of Yerington – Dan Newell

BIA – John Krause

USF&WS – Stan Wiemeyer

# Progress on Scope of Work

- Site Health and Safety Plan – Final Approved
- Conceptual Site Model – Final Approved
- Quality Assurance Project Plan – Final Approved



The Conceptual Site Model, although approved in its current final form, is considered a “living document” and will be updated as new characterization information and data is collected.

# Progress on Scope of Work

## Defined Work Plans

- Groundwater Conditions
- Yerington Pit & Pit Lake
- Fugitive Dust
- Process Areas
- Wabuska Drain Phase II
- Tailings Areas & Evaporation Ponds
- Waste Rock Areas
- Arimetco Leach Pads & Process Components





# Workplan Submittal Schedule

- See Attached Handout



# NDEP Cost Recovery

- The Administrative Order on Consent contains provisions for cost recovery from the Atlantic Richfield Company.
- Atlantic Richfield is in full compliance with the payment provisions of the AOC, and is pre-funding SFY 2004 at \$600,000.00.
- The NDEP has successfully recovered almost 70% of expenses related to the Mine.
- An additional 15% may be recovered through the Arizona Bankruptcy Court.



As of June 30, 2003:

Total Expenses = 1.86 million

Total Recovered from Atlantic Richfield = 1.27 million

Potential Recovery from AZ Bankruptcy Court (Arimetco) = \$274,000

Difference = \$318,000 \*NDEP is currently brainstorming ways of decreasing this amount.

When possible, the NDEP will continue to thank the Nevada mining industry that has donated much of the expensive equipment that the NDEP needed in 2000 when Arimetco abandoned the site.

# Overall NDEP Goals

- Complete the Scope of Work and Interim Measures promoting Teamwork With Federal Agencies and Local Stakeholders
- Detect and Mitigate Potential Hazards to Human Health and the Environment



# Overall NDEP Goals (Cont.)

- Assess options for corrective action
  - Institute Presumptive Remedies and Interim Measures as Warranted
    - Conduct them concurrent with Characterization of Potential Hazards
- Remediation/Reclamation
- Complete Corrective Action Consistent with Applicable Regulations and the NDEP Mission Statement



# Where Can You Get This Information ... and More?

- NDEP Web Page  
<http://ndep.nv.gov/yerington/minesite.htm>
- Yerington Public Library
- NDEP offices in Carson City
- EPA Region IX offices in San Francisco

